Building and Appliance Efficiency Office

Blueprint

July / August 1992, No.41

California Energy Commission

NOTE TO READERS:

The mandatory effective date of the 1992 Energy Efficiency Standards is delayed until January 1, 1993. Between July 1 and Decem-ber 31, 1992, both sets of standards are in effect. Permit applicants can choose to comply with either set of standards, but cannot mix 1988 and 1992 standards. The benefit of this delay is that it allows more time to order compliance documents, become acquainted with the standards and manuals, attend training sessions, and become familiar with any pertinent computer software.

PLEASE NOTE : The recently mailed notice of availability for the new compliance manu-als *incorrectly* states that the manda-tory effective date for the 1992 standards is July 1, 1993. The mandatory effective date is **January 1, 1993** .

Most (but not all) of the information in this Blueprint issue pertains to the 1992 stan-dards. The headings clearly note the applica-tion.

Q Questions and Answers

I have seen manufacturer's data for metal frame construction assemblies which indicates a higher overall R-value than for similar wood frame assemblies. Were these R-values determined in a manner consis-tent with Energy Commis-sion procedures? Do I need to recalcu-late the R-value?

It is likely that these R-values were **not** determined in a manner that is acceptable for compliance with the energy standards. The effective R-value of an assembly includes the interruption of thermal resistance by the framing. Metal framing short circuits the thermal resistance much more than wood.

For compliance purposes, the residential manuals have tables of effective R-values for some metal frame assemblies (1988 Energy Conservation Manual, p. G-26; 1992 Residen-tial Manual, p. G-72). The 1988 nonres-idential compliance manual also has a table of effective R-values (Energy Efficiency Manual, p. 3-8) and references the "zone method" which can be used for both residen-tial and nonresidential buildings to calculate an effective R-value (Energy Efficiency Manual, p. C-9-3). The 1992 Nonresidential Manual has a form (ENV-3) specifically for metal framed assemblies, or you can use the default table (Table B-2, p. B-12) or the zone method.

Engineering staff of the Energy Commission performed zone method calculations on **R-30** metal stud assemblies for a wall (with 2x8 framing, 24" on center ("o.c.")) and a roof (with 2x10 framing, 24" o.c.). The results were an effective R-value of **11.79** for the wall, which is equivalent to a wood construc-tion assembly with 2x4 framing, 16" o.c., with **R-13** batt insulation. The effective R-value for the roof was **16.49**, which is equivalent to 2x4 wood framing, 24" o.c., with **R-11** batt insulation and 1" foam sheathing.

If you plan to use metal frame construction, contact the Hotline for a copy of these calcu-lations, including detailed instructions for

performing them yourself.

(continued on page 2)

Questions and Answers (continued)

Do water heater replacements need an external R-12 wrap, or an R-16 combined internal and external insulation level, for compliance with the energy standards?

Only storage and backup tanks for **solar** water heating systems must meet mandatory insulation requirements. (A combined insulation level of R-16 is only allowed as an alternative to the R-12 wrap that is required for solar water heating systems (Section 2-5352(i) [revised effective April 17, 1990]; Section 150(j)).) All other water heater replacements, which are not in conjunction with a building alteration, do not have to meet the water heating "budgets" and have no mandatory insulation requirements (1988 *Building Energy Efficiency Standards*, Section 2-5351(b); 1992 *Energy Efficiency Standards*, Section 151(b)). Therefore, no external insulation is required.

Questions and Answers

Are section numbers in the 1992 Energy Efficiency Standards different than the 1988 Standards?

Yes, since the 1992 Energy Efficiency Standards are Part 6 of Title 24 (previously Part 2, Chapter 53), the old numbering configuration (2-53__) is no longer appropriate. For those of you who were familiar with section numbers, you can, in many instances, replace the "2-53" with a "1" to determine the new section number. Since this isn't always the case, the next issue of Blueprint will contain a summary of the new section numbers and their content and application.

Does the definition of "addition" change in the 1992 Energy Efficiency Standards?

Yes. An addition was previously defined as an increase in conditioned space, which is an increase in floor area or volume. Section 101(b) now defines an addition as an increase in both floor area **and** volume.

Can you explain the labeling/certification requirements for windows (fenestration products)?

There are different aspects to this new requirement; some affect manufacturers of fenestration products and some affect compliance with the 1992 Energy Efficiency Standards.

Section 116 of the Energy Efficiency Standards contains the mandatory requirements for exterior doors, windows and fenestration products (including, but not limited to, windows, sliding glass doors, french doors, skylights, curtain walls, and garden windows). The requirements for manufactured fenestration products include certifying both the U-value and that the air infiltration rate does not exceed the rate allowed in Table 1-E of this section.

The certified U-value may either be tested in accordance with the National Fenestration Rating Council (NFRC) U-value Rating Procedure or it can be a "default" U-value as determined by the Commission. Fenestration products must have a temporary label (not to be removed before inspection by the enforcement agency) certifying the U-value and that the air infiltration rate is within allowed values. The products must also have a permanent label with the U-value (or serial numbers which can be used to verify the U-value in a directory), the certifying organization, and rating procedures.

Manufacturers must comply with these requirements beginning **January 1, 1993** for all fenestration products **except** dual-pane, aluminum-frame units. Certification and labeling for dual-pane, aluminum-frame products become mandatory July 1, 1993.

Any fenestration products used in buildings complying voluntarily with the 1992 standards between July 1, 1992 and January 1,

1993, must meet the certification requirements above but need not be labeled (manufac-turer's literature must accompany the compliance submittal).

(continued on Page 3)

Questions and Answers (continued)

Until July 1, 1993, dual-pane, aluminum windows are assumed to have the U-value required in Alternative Component Packages D and E (Section 151(f), Tables 1-Z1 through 1-Z16) for **residential** compliance or the U-values required in Tables 1-I and 1-J (Section 143(a)) for **nonresidential** compliance. These "assumed" U-values can be used with any compliance approach (prescriptive or performance).

For all other fenestration products (and beginning July 1, 1993 for dual-pane, aluminum frame) you must use the certified NFRC-rated U-value or the "default" U-value found on Table G-4 of the Residential Manual (site built products must use default U-values from Table G-5) or Table 3-9 of the Nonresidential Manual.

Q

Questions and Answers

Do the new residential lighting standards require a fluorescent fix-ture in every kitchen and bathroom?

For each kitchen and each bathroom, there must be at least one high-efficacy luminaire, which is defined as 40 lumens per watt or greater (for example, fluorescent) (Energy Efficiency Standards, Section 150(k)). In addition, the standard is more specific about how this requirement is met.

1. Kitchens. Rather than the switch location determining which fixture is "general lighting" in a kitchen, it is defined as "lighting designed to provide a substantially uniform level of illumination throughout an area." This general lighting must be provided by a high efficacy luminaire(s) and must be controlled by the most accessible switch in the room.

2. Bathrooms. Rather than determining whether an area is bedroom or bathroom, or whether there is more than one fixture in the bathroom, the standards require that each room containing a water closet have at least one high efficacy luminaire (or this luminaire can be installed in an adjacent room with complementary plumbing fixtures). This high efficacy luminaire must be switched at the entrance to the room in which it is located.

3. Luminaires which are required to be high efficacy (a) cannot contain medium base incandescent light sockets (no screw-in bulbs), and (b) must be switched separately from incandescent lighting.

4. All incandescent light fixtures recessed into insulated ceilings must be approved for zero-clearance insulation cover.

Q

Questions and Answers

Are occupancy sensors required by the new standards? Will ultrasonic occupancy sensors be allowed for complying with the new standards?

Occupancy sensors are not required by the new standards. In many cases, lighting controls are required, but occupancy sensors are not the only type of control that can meet this requirement (Energy Efficiency Standards, Section 131). Occupancy sensors used to meet the control requirements must conform to the criteria of Section 119. As long as the ultrasonic sensor meets the requirements of Section 119, it can be used for compliance.

Did you Know . . . ?

CBCI Training Delayed

• Because the mandatory implementation date of the 1992 Energy Efficiency Standards is delayed, the California Building Codes Institute training is also delayed. As soon as they are rescheduled, building department staff and Blueprint readers will be notified.

SCM 3.1A Expiration

Did You Know . . . ?
(continued)

demonstrating compliance with the 1988 second generation nonresidential standards) will no longer be valid. Compliance work permitted on or after July 1, 1992 requires SCM Version 3.2A (P400-91-013, $16.00).

1992 Residential Manual

• You can order the 1992 Residential Manual by sending a self-addressed **label** and a check for $34.00, and requesting P400-92-002.

1992 Nonresidential Manual

• You can order the 1992 Nonresidential Manual by sending a self-addressed **label** and a check for $28.00, and requesting P400-92-005.

PUBLICATION ORDERS

Include a self-addressed mailing label and a check or money order (prices include tax and postage) payable to the California Energy Commission with your publication request, addressed to:

California Energy Commission
Attn: Publications MS-13
P.O. Box 944295
Sacramento, CA 94244-2950

ENERGY HOTLINE

(800) 772-3300 or (916) 324-3376

8 a.m. - 12 noon & 1 p.m. - 3 p.m.

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